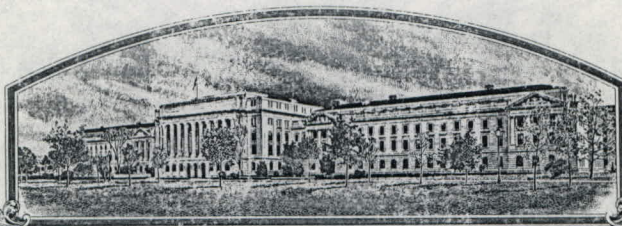


No.

9100008



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Texas Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR PROPAGATING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR USING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE VARIETY. (AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

COWPEA

'Texas Pinkeye Purple Hull'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirty-first day of July in the year of our Lord one thousand nine hundred and ninety-five.

Attest:

Acting Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) Texas Agricultural Experiment Station		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. 220-4	3. VARIETY NAME AAA pinletter 1 Mar 1995 Purple Texas Pinkeye at hull
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) Texas Foundation Seed Service Texas Agricultural Experiment Station College Station, TX 77843-2581		5. PHONE (Include area code) 409/845-4051	FOR OFFICIAL USE ONLY PVPO NUMBER 91000008 Filing and Examination Fee. \$ 2150. - Date Oct. 9 1990 Certificate Fee. \$ 300. 00 Date May 30, 1995
6. GENUS AND SPECIES NAME Vigna umguiculata (L.) Walp.	7. FAMILY NAME (Botanical) Fabaceae		
8. CROP KIND NAME (Common Name) Cowpea	9. DATE OF DETERMINATION October, 1987		
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) State Agricultural Experiment Station			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION N/A		12. DATE OF INCORPORATION	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Dr. Paul G. Sebesta, Director Texas Foundation Seed Service Texas Agricultural Experiment Station College Station, TX 77843-2581 409/845-4051 PHONE (Include area code):			

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

- a. ☒ Exhibit A, Origin and Breeding History of the Variety.
b. ☒ Exhibit B, Novelty Statement.
c. ☒ Exhibit C, Objective Description of Variety.
d. ☐ Exhibit D, Additional Description of Variety.
e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.
f. ☒ Seed Sample (2,500 viable untreated seeds) Date Seed Sample mailed to Plant Variety Protection Office Oct. 4, 1990
g. ☒ Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act)

☒ YES (If "YES," answer items 16 and 17 below) ☐ NO (If "NO," skip to item 18 below)

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?

☒ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?

☒ FOUNDATION ☐ REGISTERED ☒ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?

☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act Give date _____)
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?

☐ YES (If "YES," give names of countries and dates)
☒ NO

20. The applicant(s) declares that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

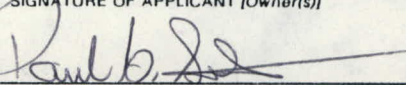
SIGNATURE OF APPLICANT [Owner(s)] 	CAPACITY OR TITLE Director	DATE 10-18-90
SIGNATURE OF APPLICANT [Owner(s)]	CAPACITY OR TITLE	DATE

Exhibit A. Origin and Breeding History of the Variety

'Texas Pinkeye Purple Hull' (Fig. 1) was derived from a cross made in the greenhouse at College Station in the fall of 1984. The parents (Fig. 2) were TX63-7, an advanced breeding line from the Texas program, and US 432, subsequently released as germplasm by the USDA-ARS in 1988 (Fery and Dukes, 1990). The F₁ was selfed in the greenhouse in the Spring of 1985 to produce F₂ seed. In the summer of 1985, a single plant selection was made from the segregating F₂ population and was assigned the breeding line number 220-4. Another single plant selection was made from F₃ rows in the summer of 1986. Selection was based on the plant's superior architecture, pod location, and high yield of attractive peas. Seed of the selection was planted in the greenhouse, and single seed descent was practiced for four subsequent cycles (F₄-F₇). A small seed increase block was planted in the field at College Station in the fall of 1987. The line was then evaluated as plant rows at both College Station and Lubbock in the summer of 1988. Seed from these two plantings was used for a 1988 fall increase in Weslaco, followed by a spring 1989 increase at Weslaco. Careful and intense roguing was practiced with each seed increase to eliminate a rare but persistent cream pea variant resembling the male parent. The variant is easily observed, as it has no anthocyanin in the plant or seed and is later in maturity. Also, the seed is a cream type similar to the male parent. This variant can be controlled with the regular supply of new breeders' seed to the Texas Foundation Seed Service, and hopefully, with time, will be totally eliminated. Seed derived from the spring 1989 Weslaco planting was provided to the Texas Foundation Seed Service for seed increase, supplied to canners and freezers for field and processing evaluations, utilized in the Texas statewide cowpea testing program with locations at Weslaco, College Station, Temple, Overton, Munday and Lubbock, and used for entry in the Regional Southernpea Cooperative Trials. 'Texas Pinkeye Purple Hull' has been observed to be stable and uniform for seven years and numerous locations in Texas and the southeastern United States.

Exhibit B. Novelty Statement

'Texas Pinkeye Purple Hull' has a greatly improved plant architecture, compared to the ~~standard pinkeye purple hull~~ cultivars such as 'Pinkeye Purple Hull', 'Pinkeye Purple Hull-BVR',

its most similar
Amended
22 Feb 1995 letter, AAA







and 'Coronet', and is distinctly different in appearance. Mature plants of 'Texas Pinkeye Purple Hull' will cover 30 to 45 cm of row, while 'Pinkeye Purple Hull', 'Pinkeye Purple Hull-BVR' and 'Coronet' will usually cover 60 to 100 cm of row (Table 1). The plants are 15 to 20 cm taller than the above three cultivars and unlike the other three, have a high bush growth habit with a determinate growth pattern. 'Texas Pinkeye Purple Hull' flowers differ from most other pinkeye cultivars by exhibiting more yellow at the throat of the standard petals. In addition, more purple is noted above the yellow coloration on the standard petal and tinged wing and keel petals. There is a greater fanning out of the pigmentation on the underside of the standard petals. The calyx is distinctly darker in anthocyanin pigmentation. Pod color is green and purple when immature, dark purple when ready for mature-green harvest, and purple when dry. The very slightly curved pods are concentrated at or above the foliage level. Fresh peas are slightly kidney shaped and green with a bright pink eye, while the dry seed has a smooth to slightly wrinkled cream testa with a dark maroon eye, which is slightly larger than that of 'Pinkeye Purple Hull'. The testa of 'Texas Pinkeye Purple Hull' is less bleached than that of 'Pinkeye Purple Hull'. 'Texas Pinkeye Purple Hull' seeds are slightly smaller than those of 'Pinkeye Purple Hull', with 100 seed weight of about 18 gm (Table 2). Seedling cotyledon leaves exhibit a dull green color, which is markedly different from the glossy green of 'Pinkeye Purple Hull'. As the plant matures, there is a noticeable amount of anthocyanin streaking in the petiole and the leaves are a darker green than 'Pinkeye Purple Hull-BVR' and other standard pinkeye varieties, as indicated by the Hunterlab Labscan Spectrocolorimeter measuring in CIELAB (Tables 3 & 4). The mature-green stage is reached in 54 to 60 days. Unlike 'Pinkeye Purple Hull', 'Texas Pinkeye Purple Hull' does not exhibit extreme chlorosis when grown on highly calcareous soils, and will produce under these circumstances.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION
BELTSVILLE, MARYLAND 20705
OBJECTIVE DESCRIPTION OF VARIETY

INSTRUCTIONS: See Reverse

NAME OF APPLICANT(S) Texas Agricultural Experiment Station	VARIETY NAME OR TEMPORARY DESIGNATION 'Texas Pinkeye Purple Hull'
ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code) Texas A&M University TAES Systems Administration Bldg., College Station, TX 77843	FOR OFFICIAL USE ONLY PVPO NUMBER 9100008

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. or) when number is either 99 or less.

1. PLANT HABIT AT GREEN SHELL STAGE: [HABT] <input type="text" value="1"/> 1 = ERECT (EREC) 2 = SEMIERECT (SEMI) 3 = PROCUMBENT (PROC) <input type="text" value="4"/> 4 = PROSTRATE (PROS)		2. PLANT SIZE: [HT] <input type="text" value="5"/> <input type="text" value="7"/> CM. HIGH AT MATURITY	
3. STEM COLOR: [STEM] <input type="text" value="1"/> 1 = GREEN (GREN) 2 = PURPLE (PURP)		4. NODE COLOR: [NODE] <input type="text" value="2"/> 1 = GREEN (GREN) 2 = PURPLE (PURP)	
5. FOLIAGE: [FLGE] <input type="text" value="2"/> 1 = OPEN (OPEN) 2 = COMPACT (COMP)		6. LEAF COLOR (See Reverse): [LCOL] <input type="text" value="3"/> 1 = LIGHT GREEN (LTGN) 2 = MEDIUM GREEN (MDGN) 3 = DARK GREEN (DKGN)	
7. LEAF SURFACE: [LSRF] <input type="text" value="1"/> 1 = SMOOTH (SMOO) 2 = BLISTERED (BLIS)		[LUST] <input type="text" value="2"/> 1 = DULL (DULL) 2 = GLOSSY (GLOS)	
8. FLOWER COLOR (See Reverse): [FCOL] <input type="text" value="3"/> 1 = PURPLE (PURP) 2 = LAVENDER (LAVN) 3 = TINGED (TING) <input type="text" value="4"/> 4 = WHITE (WHIT)		9. FIRST FLOWERING [#D] <input type="text" value="4"/> <input type="text" value="0"/> NUMBER OF DAYS	
10. POD: * <input type="text" value="3"/> PLACEMENT: 1 = BELOW FOLIAGE [PIM] 2 = ABOVE FOLIAGE 3 = AT FOLIAGE LEVEL * <input type="text" value="1"/> <input type="text" value="7"/> CM. LONG [PL] <input type="text" value="0"/> <input type="text" value="8"/> MM. WIDE [PW] * <input type="text" value="2"/> CONSTRICTIONS: 1 = NONE [PCON] 2 = SLIGHT 3 = DEEP * <input type="text" value="4"/> COLOR (Green shell maturity): 1 = SILVER-GREEN (SLVG) 2 = GREEN (GREN) 3 = LIGHT PURPLE (LTPU) 4 = DARK PURPLE (DKPU) * <input type="text" value="4"/> COLOR (Dry maturity): 1 = WHITE (WHIT) 2 = STRAW (STRW) 3 = DRAB (DRAB) 4 = PURPLE (PURP) <input type="text" value="2"/> CROSS SECTION (Green shell stage-width/height): 1 = (1: <) (1: <) 2 = (1: >) (1: >) 3 = (1: 1) (1: 1)			
11. SEED: <input type="text" value="1"/> <input type="text" value="2"/> NUMBER OF SEEDS PER POD [#S] <input type="text" value="1"/> <input type="text" value="2"/> * SHAPE (See Reverse): [SHAP] <input type="text" value="0"/> <input type="text" value="8"/> MM. LONG [SL] <input type="text" value="0"/> <input type="text" value="4"/> MM. WIDE [SW] <input type="text" value="1"/> * HILAR EYE TYPE: [HIET] <input type="text" value="1"/> <input type="text" value="7"/> <input type="text" value="1"/> GM. PER 1000 SEEDS [GMS]			
(KIDN) (OV OV) (CROW) 1 =  (SPEC) 2 =  (BLOT) 3 =  (NARR) 4 =  (BIGG) 5 =  (SMAL) 6 =  (VSML) 4 = GLOBOSE (GLOB) 5 = RHOMBOID (RHOM) (SING) (PATT) (MARR) 1 = SINGLE COLOR (SPEC) 2 = PATTERNED (PATT) 3 = MARBLED (MARR) 4 = SPECKLED 5 = Marbled & Speckled (MB&S)			
* <input type="text" value="1"/> COAT: 1 = WRINKLED [SDC] 2 = SMOOTH * <input type="text" value="0"/> PRIMARY COLOR (Single color or basic color): [CC1] 1 = PURPLE (PUR) 2 = BLACK (BLK) 3 = DULL BLACK (DLB) 4 = BLUE (BLU) 5 = RED (RED) 6 = COFFEE (COF) 7 = MAROON (MRN) 8 = BUFF OR CLAY (BUF) 9 = PINK (PNK) 0 = WHITE (WHIT)			
* SECONDARY COLORS PRODUCING THE PATTERN, MARBLING OR SPECKLING (Enter a zero in boxes where the colors do not identify the secondary colors.): [CC2] & [CC3] <input type="text" value="0"/> 1 = PURPLE (PUR) <input type="text" value="0"/> 2 = BLACK (BLK) <input type="text" value="0"/> 3 = DULL BLACK (DLB) <input type="text" value="0"/> 4 = BLUE (BLU) <input type="text" value="0"/> 5 = RED (RED) <input type="text" value="0"/> 6 = COFFEE (COF) <input type="text" value="0"/> 7 = MAROON (MRN) <input type="text" value="0"/> 8 = BUFF (BUF) <input type="text" value="0"/> 9 = PINK (PNK) <input type="text" value="0"/> 0 = WHITE (WHIT)			

* 12. DISEASE (0 = Not Tested, 1 = Susceptible, 2 = Resistant) [DISEASE]

<input type="checkbox"/> 0 FUSARIUM WILT (FUWL)	<input type="checkbox"/> 2 ROOT KNOT NEMATODE (RTKN)	<input type="checkbox"/> 0 CHARCOAL ROT (CHRT)	<input type="checkbox"/> 0 ZONATE LEAF SPOT (ZONE)
<input type="checkbox"/> 0 RED LEAF SPOT (REDL)	<input type="checkbox"/> 1 POWDERY MILDEW (PWML)	<input type="checkbox"/> 0 COWPEA CHLOROTIC MOTTLE VIRUS (CPCM)	<input type="checkbox"/> 0 SOUTHERN BEAN MOSAIC VIRUS (SBMV)
<input type="checkbox"/> 0 BEAN YELLOW MOSAIC VIRUS (BYMV)	<input type="checkbox"/> 0 CUCUMBER MOSAIC VIRUS (CUMV)	<input type="checkbox"/> 0 BEAN POD MOTTLE VIRUS (BPMV)	<input type="checkbox"/> 0 SOYBEAN CYST NEMATODE (SYCN)
<input type="checkbox"/> 0 COWPEA YELLOW MOSAIC VIRUS (CPMV)	<input type="checkbox"/> 0 BACTERIAL CANKER (BCTC)	<input type="checkbox"/> 1 CERCOSPORA LEAF-SPOT (CERL)	<input type="checkbox"/> 0 STING NEMATODE (STNG)
<input type="checkbox"/> 1 RUST (RUST)	<input type="checkbox"/> 0 SOUTHERN BLIGHT (SOBL)	<input type="checkbox"/> 0 ROOT ROT (RTRT)	<input type="checkbox"/> 2 OTHER (Specify) <u>BCMV</u>

* 13. INSECT (0 = Not Tested, 1 = Susceptible, 2 = Resistant) [INSECT]

<input type="checkbox"/> 0 MEXICAN BEAN BEETLE (MEXB)	<input type="checkbox"/> 1 COWPEA APHID (COPA)	<input type="checkbox"/> 1 COWPEA CURCULIO (CURC)	<input type="checkbox"/> 1 STINK BUGS (STNB)
<input type="checkbox"/> 1 LESSER CORNSTALK BORER (LCRN)	<input type="checkbox"/> 0 EUROPEAN CORNBORER (ECRN)	<input type="checkbox"/> 0 CORN EARWORM (CNEW)	<input type="checkbox"/> 0 BEET ARMYWORM (ARMY)
<input type="checkbox"/> 1 THRIPS (THRP)	<input type="checkbox"/> 1 SERPENTINE LEAF MINERS (SLFM)	<input type="checkbox"/> OTHER (Specify) _____	

14. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant size	Unique - none	Plant habit	Unique - none
Pod size	Pinkeye Purple Hull	Plant pigmentation	Pinkeye Purple Hull
No. days to maturity	Santee	Seed coloration	Pinkeye Purple Hull

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for completing this form:

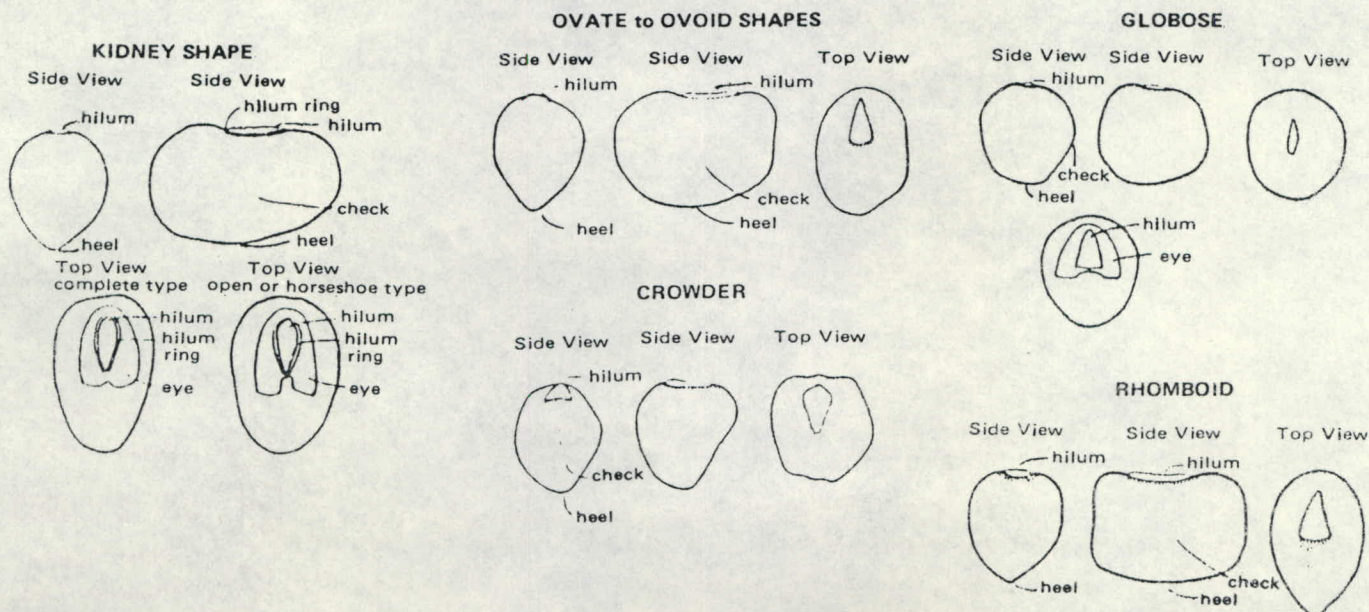
1. C. V. Piper, 1912, Agricultural Varieties of Cowpea and Related Species, U.S.D.A., Bulletin No. 229.
2. L. L. Ligon, 1958, Characteristics of Cowpea Varieties, Oklahoma State University, Bulletin B-518.
3. W. J. Spillman and W. J. Sando, 1929, Mendelian Factors in the Cowpea, papers of the Michigan Academy of Science, Arts and Letters, Vol. XI.

LEAF COLOR: Any recognized color chart may be used to determine the leaf color of the described variety. The following cowpea varieties may be used as a guide to identify colors listed:

1. Light Green - Texas Cream 40
2. Medium Green - Big Boy
3. Dark Green - California Blackeye #5.

FLOWER COLOR: White flower should be treated with a one percent solution of hydrochloric acid to determine if anthocyanin is present. If color appears as a result of the test, classify as tinged.

TERMS USED TO DESCRIBE SHAPES:



11. (Cont'd)

ADDITIONAL EYE CHARACTERS:

☐ 1 HILAR EYE: 1 = INCOMPLETE 2 = COMPLETE

* ☐ 7 PRIMARY COLOR OF EYE (Single color or basic color): 1 = PURPLE 2 = BLACK 3 = DULL BLACK 4 = BLUE 5 = RED
6 = COFFEE 7 = MAROON 8 = BUFF OR CLAY 9 = PINK 0 = WHITE

* SECONDARY COLORS OF EYE (Enter a zero in boxes where the colors do not identify the secondary colors.):

<input type="checkbox"/> 0 1 = PURPLE	<input type="checkbox"/> 0 2 = BLACK	<input type="checkbox"/> 0 3 = DULL BLACK	<input type="checkbox"/> 0 4 = BLUE	<input type="checkbox"/> 0 5 = RED
<input type="checkbox"/> 0 6 = COFFEE	<input type="checkbox"/> 0 7 = MAROON	<input type="checkbox"/> 0 8 = BUFF	<input type="checkbox"/> 0 9 = PINK	<input type="checkbox"/> 0 0 = WHITE

☐ 1 HILAR EYE SIZE: 1 = BIG 2 = MEDIUM 3 = SMALL 4 = VERY SMALL

☐ 3 HILUM RING COLOR: 1 = PURPLE 2 = BLACK 3 = DULL BLACK 4 = BLUE 5 = RED
6 = COFFEE 7 = MAROON 8 = BUFF OR CLAY 9 = PINK 0 = WHITE

Table 1. Evaluation of 'Texas Pinkeye' resistance to selected isolates of blackeye cowpea mosaic virus (BlCMV) and cowpea aphid-borne mosaic virus (CAMV).

Virus	Isolate	Disease Reaction	Tests for Virus Presence
		Symptoms	ELISA
BlCMV	Georgia	None	No virus detectable ^{1/}
	9-3B (India)	None	Virus present ^{2/}
	0-8B (Calif)	None	Virus present ^{2/}
CAMV	Morocco	Mosaic, Stunting	Presence confirmed ^{3/}
	9-7C (Botswana)	None	No virus detectable ^{1/}
	0-4C (Senegal)	None	No virus detectable ^{1/}

^{1/} Immune reaction to virus inoculation.

^{2/} Latent (symptomless) infection.

^{3/} Severe symptoms induced by Morocco isolate of CAMV.

Exhibit D. Additional Description of Variety

'Texas Pinkeye Purple Hull' was found to be immune to a Georgia isolate of blackeye cowpea mosaic virus (BICMV) i.e., no ELISA-detectable BICMV was present in plants 4 weeks after inoculation (unpublished data, R.O. Hampton, USDA-ARS Virology Lab, Department of Botany and Plant Pathology, Oregon State University, Corvallis, Oregon). The cultivar was highly tolerant to two other BICMV isolates from California and India, i.e., inoculated plants showed no symptoms, but BICMV was readily detectable in the plants. 'Texas Pinkeye Purple Hull' was immune to two isolates of cowpea aphid-borne mosaic virus (CAMV) (exotic to the U.S.), but was quite susceptible (delayed, pronounced mosaic symptoms) to a Moroccan isolate of CAMV. Virtually all cowpea genotypes are susceptible to this virulent CAMV isolate. 'Texas Pinkeye Purple Hull' has exhibited a high level of resistance to root knot in greenhouse and field tests (unpublished data, P.D. Dukes and R.L. Fery, U.S. Vegetable Laboratory, USDA-ARS, Charleston, S.C.). Root knot is a major root disease of cowpea incited by several species of the root knot nematode genus *Meloidogyne*, in this case *Meloidogyne incognita* Race 1. It is susceptible to rust (*Uromyces appendiculatus*), powdery mildew (*Erysiphe polygoni* DC), and cercospora leaf spot (*Cercospora* spp.).

Yield of 'Texas Pinkeye Purple Hull' has been outstanding in numerous trials throughout Texas and in the Regional Southernpea Cooperative Trials. Its yield has generally been equal to or greater than 'Pinkeye Purple Hull' and 'Pinkeye Purple Hull-BVR', and significantly higher when planted either on narrow (50 cm apart) or twin (25 cm apart on 100 cm centers) rows. In the 1990 Regional Southernpea Cooperative Trials, 'Texas Pinkeye Purple Hull' produced higher yield at all ten locations across six states than did the check cultivar Pinkeye Purple Hull-BVR (Table 5). The apparent higher yield of 'Texas Pinkeye Purple Hull' over 'Pinkeye Purple Hull-BVR', when planted in narrow rows, is illustrated in Table 6, which presents the 1989 and 1990 Cooperative Trial results from the two narrow row spacing sites at Kibler, AR (46 cm) and Jackson, TN (76 cm). Thus, 'Texas Pinkeye Purple Hull' offers producers greater flexibility in row spacing and planting configurations than do varieties currently in use. Unlike 'Pinkeye Purple Hull-BVR', 'Pinkeye Purple Hull' and 'Coronet', 'Texas Pinkeye Purple Hull' can be harvested

8

mechanically in the fresh green stage using a Pixall harvester. Also, it is resistant to lodging and pod shattering.

Exhibit E: Statement of the Basis of Applicant's Ownership - 'Texas Pinkeye Purple Hull'

'Texas Pinkeye Purple Hull' was developed by Dr. J. Creighton Miller, Jr. Professor of Horticulture and Genetics, and Mr. Douglas C. Scheuring, Research Associate, with assistance from Mr. Douglas G. Smallwood, of the Vegetable Legume Improvement Program, Department of Horticultural Sciences, Texas A& M University, and the Texas Agricultural Experiment Station (TAES). They are employees of TAES. Research Support Services for Special Projects at the TAES, Weslaco, along with representatives of private canning and freezing companies also participated. Colleagues from other experiment stations throughout the South and the U.S. Department of Agriculture, Agricultural Research Service (USDA-ARS) assisted in evaluation of the material. Financing of the Vegetable Legume Improvement Program is totally from TAES funds. The TAES, by virtue of employing the principal personnel, providing the facilities and financing, is the owner of 'Texas Pinkeye Purple Hull'.

Literature Cited

- Fery, R.L. and P.D. Dukes. 1990. Registration of US-432 cowpea (southernpea) germplasm. Crop Sci. 30:428.
- McQuire, R.G. 1992. Reporting of Objective Color Measurements. HortSci. 27(2):1254-55.

Table 1. Comparison of plant height, plant width, pod length, days to flower, and days to fresh harvest of Texas Pinkeye Purple Hull, and three popular pinkeye cowpea varieties, Lubbock, Texas, Summer 1993.

	Characteristics ^Z				
	Plant Height (cm)	Plant Width (cm)	Pod Length (cm)	Days to Flower	Days to Harvest
Texas Pinkeye Purple Hull	57.9 a	35.7 b	17.8 a	40.0 c	53.5 c
Pinkeye Purple Hull BVR	41.7 b	71.6 a	17.5 a	44.0 b	61.3 ab
Coronet	37.9 c	71.4 a	16.9 ab	47.3 a	62.5 a
Pinkeye Purple Hull	42.8 b	68.7 a	15.8 b	45.8 ab	60.5 ab

^ZMean separation at $P = 0.05$ according to ANOVA and LSD means separation.

Table 2. Analysis of plant height, days to first flower, days to fresh harvest and 1000 seed weight of Texas Pinkeye Purple Hull and three popular pinkeye cowpea varieties, College Station, Texas, Summer 1993.

	Characteristics ^Z			
	Plant Height (cm)	Days to Flower	Days to Harvest	1000 Seed Weight (gm)
Texas Pinkeye Purple Hull	48.0 a	37 d	50.3 c	170.8 bc
Pinkeye Purple Hull BVR	39.0 c	39 b	55.3 ab	166.5 c
Coronet	39.3 c	40 a	55.8 a	176.0 a
Pinkeye Purple Hull	42.7 b	38 c	55.0 b	175.5 ab

^ZMean separation at P = 0.05 according to ANOVA and LSD means separation.

Table 3. Analysis of leaf color of 'Texas Pinkeye Purple Hull' and Pinkeye Purple Hull. Lubbock, Texas, Summer 1993.

	Color Characteristics ^{Z, Y}					Color Value
	L*	a*	b*	C*	h°	
'Texas Pinkeye Purple Hull'	29.8 b	-5.0 a	8.4 b	9.8 b	121.3 a	31.4 b
Pinkeye Purple Hull BVR	32.7 a	-5.9 a	11.9 a	13.7 a	126.6 a	35.4 a

^ZMeans of 12 replications using a Hunterlab Labscan spectrophotometer measuring in CIELAB. L* = lightness, a* = bluish-green/red-purple hue component, b* = yellow/blue hue component, C* [(a*² + b*²)^{1/2}] = chroma, h° (from arctangent b*/a*) = hue angle (0° = red-purple, 90° = yellow, 180° = bluish-green, 270° = blue), Color Value = (L*² + a*² + b*²)^{1/2} an overall value accounting for all components.

^YMean separation at $P = 0.05$ according to ANOVA and LSD means separation.

Table 4. Analysis of leaf color of 'Texas Pinkeye Purple Hull' and Pinkeye Purple Hull. College Station, Texas, Summer 1993.

	Color Characteristics ^{Z, Y}					Color Value
	L*	a*	b*	C*	h°	
Texas Pinkeye Purple Hull	27.8 b	-4.1 a	7.0 b	8.1 b	120.2 a	28.9 b
Pinkeye Purple Hull BVR	30.9 a	-5.2 b	10.0 a	11.3 a	117.3 b	32.9 a

^ZMeans of 12 replications using a Hunterlab Labscan spectrophotometer measuring in CIELAB. L* = lightness, a* = bluish-green/red-purple hue component, b* = yellow/blue hue component, C* [(a*² + b*²)^{1/2}] = chroma, h° (from arctangent b*/a*) = hue angle (0° = red-purple, 90° = yellow, 180° = bluish-green, 270° = blue), Color Value = (L*² + a*² + b*²)^{1/2} an overall value accounting for all components.

^YMean separation at $P = 0.05$ according to ANOVA and LSD means separation.

Table 5. Yield comparison of imbibed seed of Texas Pinkeye Purple Hull (TXPE) and Pinkeye Purple Hull-BVR (BVR) at ten locations in 1990.

Location	Spacing		TXPE		BVR	
	(cm)	(in)	(kg/ha)	(lbs/A)	(kg/ha)	(lbs/A)
Milstead, AL	107	42	3367	3006	3156	2818
Fayetteville, AR	107	42	1509	1347	1402	1252
Hope, AR	91	36	2772	2475	2200	1964
Kibler, AR	46	18	2402	2145	1430	1284
Calhoun, LA	102	40	2576	2300	1959	1749
Charleston, SC	102	40	2135	1906	1959	1749
Jackson, TN	76	30	696	621	437	390
College Station, TX	102	40	661	590	75	67
Lubbock, TX	102	40	3309	2952	1641	1465
Overton, TX	102	40	1216	1086	465	415
MEAN			2064 ^z	1843	1017	908

^zThe genotypic effect was tested against the genotype (G) x location (L) interaction and was found to be highly significant. There was no crossover interaction since TXPE outyielded BVR at all ten locations and the G x L interaction is considered not significant since it contributed only 5.4% of the total variability.

Table 6. Yield comparison of imbibed seed of Texas Pinkeye Purple Hull (TXPE) and Pinkeye Purple Hull-BVR (BVR) grown on narrow rows in two locations, Regional Southernpea Cooperative High Density Trials, 1989 and 1990.

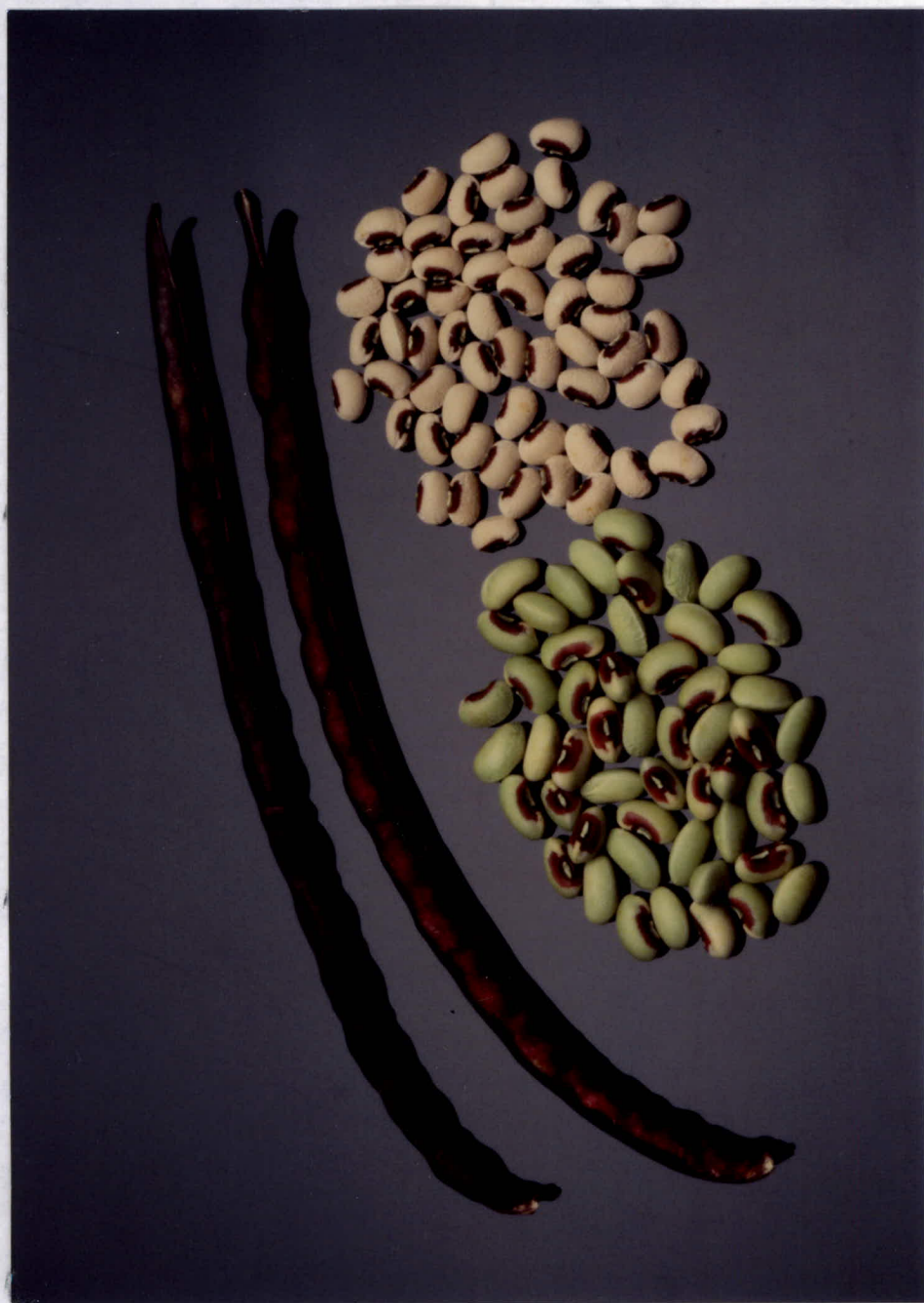
Spacing (cm)	Spacing (in)	Location	Year	Yield kg/ha		Yield lbs/A	
				TXPE	BVR	TXPE	BVR
46	18	Kibler, AR	1989	3810	1753	3402	1565
46	18	Kibler, AR	1990	2402	1438	2145	1284
76	30	Jackson, TN	1989	1913	1425	1708	1272
76	30	Jackson, TN	1990	696	437	621	390
MEAN				2205 ^z	1263	1969	1128

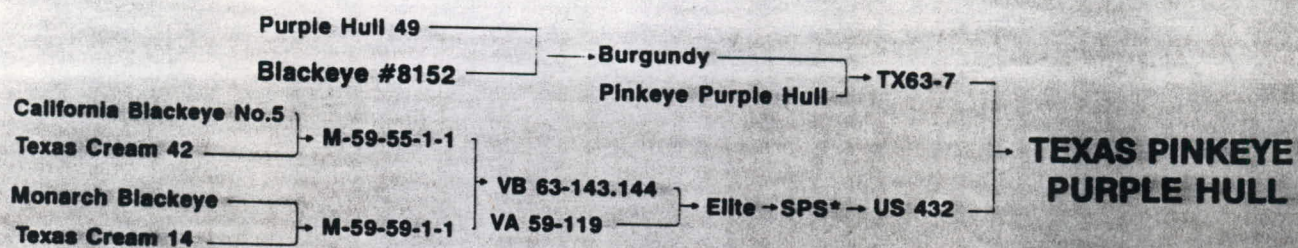
^zThe genotypic effect was not significant at the 5% level (but significant at the 10% level), probably due to the small data set, when tested against the Genotype x Location interaction.

Fig. 1. Dry (top) and fresh (bottom) pods and fresh (left) and dry (right) seeds of 'Texas Pinkeye Purple Hull' cowpea.

Fig. 2. Pedigree of 'Texas Pinkeye Purple Hull' cowpea.

9100008





***Single plant selection from Elite**

Processing and Quality

Texas Pinkeye has undergone commercial canning trials in Blytheville, AR by Bush Brothers & Co. Its canning quality was rated very high by Mr. Allen Bush, President of Bush Brothers & Co. Entries in the 1989 Southern Cooperative Trials were subjected to processing and taste panel evaluation conducted jointly by the Departments of Horticulture and Food Science at the University of Arkansas, Fayetteville (Tables 4 & 5). Again, its processing qualities received a very high rating and were generally equivalent to or better than the check varieties used by the industry, Pinkeye Purple Hull and Coronet.

Extensive field plantings and full-blown freezing plant production runs were conducted during the spring and fall of 1989 in the Rio Grande Valley by Rio Grande Foods, Inc. They enthusiastically endorse this pea both from a production and processing standpoint. They have been totally involved with the testing of this line from the very beginning and are very anxious to see it released without delay.

Exhibit C: Objective Description of Variety

The cotyledon leaves of the seedling exhibit a dull green color, which is markedly different from the glossy green of Pinkeye Purple Hull. The first true leaf (trifoliate) has a small patch of anthocyanin at the base of each leaflet. As the plant matures, there is a noticeable amount of anthocyanin streaking in the petiole. The flowers are lilac in color, while the pod is dark purple in the immature stage and light purple when dry. The seed testa is green, with a medium sized pink eye when fresh and buff with a maroon eye when dry.

Texas Pinkeye exhibits an upright stature with pods borne in a concentrated fashion, usually well above the foliage level, which is ideal for mechanical harvest. In comparison, Pinkeye Purple Hull has a procumbent plant type with pods scattered slightly above or at foliage level. Texas Pinkeye seeds are slightly smaller than those of Pinkeye Purple Hull with 100 seed weight of about 16 gm compared to 17 gm for

Table 1. Mean dry seed yield in Lbs/A of three of 14 entries from the 1989 Texas State Cowpea Trial, including Texas Pinkeye and two check varieties.

Cultivar	Location				Mean
	College Station	Weslaco	Lubbock	Overton	
Texas Pinkeye	417 b	685 a	1001 ab	645 b	687
Pinkeye Purple Hull-V	571 a	363 b	933 ab	765 a	658
California Blackeye No. 5	350 b	526 ab	1058 a	163 c	524
Mean	446	525	997	524	

Table 2. Mean dry seed yield in Lbs/A of seven cultivars from the 1989 Texas State Pinkeye Trial, which included Texas Pinkeye.

Cultivar	Location				Mean
	College Station	Weslaco	Lubbock	Overton	
Texas Pinkeye	1051 ab	406 a	1031 ab	301 ab	697
Pinkeye Purple Hull - BVR	735 bc	324 abc	1004 ab	267 b	583
Pinkeye Purple Hull - V	1007 ab	331 ab	1151 a	323 ab	703
Corona	943 ab	181 de	718 bc	288 ab	533
Coronet	811 abc	195 d	1159 b	161 b	582
Mopod	477 c	65 e	733 bc	143 b	355
Mississippi Pinkeye	1180 a	235 bcd	583 c		
Mean	886	248	911		

Table 3. Imbibed seed weight in Lbs/A of Texas Pinkeye and the check variety, Pinkeye Purple Hull, from the 1989 Southernpea Cooperative Trial.

Location	Row Width (In.)	Cultivar	
		Texas Pinkeye	Pinkeye Purple Hull-BVR
Milstead, AL	40	820	968
Bald Knob, AR	42	3373	4337
Hope, AR	36	1626	1932
Kibler, AR	18	3402	1565
Charleston, SC	40	1722	1924
Jackson, TN	30	1708	1272
College Station, TX	40	587	839
Lubbock, TX	40	1007	1043
Overton, TX	40	1037	846
Mean		1698	1636

Table 4. Sensory evaluations following canning for selected cultivars from the 1989 Southernpea Cooperative Trial conducted at the University of Arkansas.

Cultivar	Color		Wholeness	Texture	Flavor	General Appearance
	Peas	Liquor				
Texas Pinkeye	7.6 ^a	7.3	8.8	8.1	8.2	7.8
Pinkeye Purple Hull-BVR	7.7	7.3	8.8	8.2	8.0	7.8
Coronet	8.0	7.6	8.6	8.2	7.9	7.8
Pinkeye Purple Hull- C.T. Smith	7.3	7.3	8.3	7.7	7.6	7.6

^aScore below 6 unacceptable

Table 5. Drained weight, percent splits, and shear pressure evaluations following canning for selected cultivars from the 1989 Southernpea Cooperative Trial conducted at the University of Arkansas.

Cultivar	Drained ¹ Weight	% Splits	Shear Lbs/150g
Texas Pinkeye	302.25	2	218
Pinkeye Purple Hull-BVR	289.97	0	248
Coronet	317.85	0	217
Pinkeye Purple Hull-C.T. Smith	322.49	0	242

¹Fill weight - 217 g. (300 x 406 cans).

Pinkeye Purple Hull. The testa of Texas Pinkeye is less bleached than that of Pinkeye Purple Hull.

Exhibit E: Statement of the Basis of Applicant's Ownership- 'Texas Pinkeye'

Texas Pinkeye was developed by Dr. J. Creighton Miller, Jr., Professor of Horticulture and Genetics, and Mr. Douglas C. Scheuring, Research Assistant, with assistance from Mr. Douglas G. Smallwood, of the Vegetable Legume Improvement Program, Department of Horticultural Sciences, Texas A&M University, and the Texas Agricultural Experiment Station (TAES). They are employees of TAES. Research Support Services for Special Projects at the TAES, Weslaco, along with representatives of private canning and freezing companies also participated. Colleagues from other experiment stations throughout the South and the U.S. Department of Agriculture, Agricultural Research Service (USDA-ARS) assisted in evaluation of the material. Financing of the Vegetable Legume Program is totally from TAES funds. The TAES, by virtue of employing the principal personnel, providing the facilities and financing, is the owner of 'Texas Pinkeye'.